CITY OF TUCSON
GAS PIPE INSTALLATION STANDARDS

These standards are intended to be a guide to the homeowner reconnecting, replacing or modifying a gas line. This standard does not supersede the Uniform Plumbing Code. For more specific information refer to Chapter 12 of the UPC.

- Gas pipe shall not be bent in any way. Changes in direction of gas piping shall be made by the appropriate use of approved fittings.
- Excavations required for the installation of underground piping shall be left open until such time as the piping has been inspected and approved.
- Underground piping shall be installed with a minimum cover:
  1. Metallic…….12 inches
  2. Plastic……18 inches
- Gas pipe may not be installed *in or on* the ground under any building or structure. The term "building or structure" shall include porches, steps, breezeways, roofed area, roofed patios, carports, covered walks and driveways and similar structures. All exposed gas piping shall be kept at least six inches above grade or structure.
- All exposed piping installed on a roof shall be kept at least one and one-half inches above the roof and secured to blocks or supports at intervals indicated in Table 12-3.
- All gas pipe protective coating shall be of approved type, machine applied in conformance with approved standards.
- Joints must be cleaned, coated with approved gas pipe paint primer and hand wrapped spirally with approved plastic tape.
- Where unions are necessary, right and left nipples and couplings shall be used. Ground joint unions are approved under very limited conditions. Please refer to Section 1211.3.2 of the 2006 Uniform Plumbing Code.
- An accessible shut-off valve be installed in the fuel supply piping, within three feet of the appliance and ahead of the union connection to the appliance.
- A number 18 covered tracer-wire shall be installed with the attached to underground non-metallic gas piping and shall terminate above grade at each end. Plastic pipe shall be factory marked with the words "Natural Gas".
- **All gas pipe installations must be tested to verify there are no leaks.** The test must maintain the following pressure for a period of at least 15 minutes.
  1. **10** psi for threaded metallic pipe and non-metallic pipe.
  2. **60** psi for welded metallic pipe.
  3. **3** psi for mobile homes.
- The inspection of chimneys and vents on gas appliances shall be made after the chimney, vents or parts, authorized by a permit, have been installed and before cover/concealment.
- Gas storage-type water heaters shall be provided with a temperature and pressure relief valve with a relief drain to the outside of the building or to an approved location.
- **NOTE:** If you are repairing, replacing or adding gas line, it is important to verify that the pipe you are replacing or adding is the correct size. In order to do this you need 2 things:
  1. The total length of the pipe measured from the meter to the farthest away appliance..
  2. The total BTU's of all the appliances in the house that are being fed from the gas meter.

TABLE 12-1
APPROXIMATE GAS INPUT FOR TYPICAL APPLIANCES

Appliance	Input Btu/h. (approx.)
Space Heating Units	
Warm air furnace	
Single Family	100,000
Multifamily, per unit	60,000
Hydronic boiler	
Single Family	100,000
Multifamily, per unit	60,000
Space and Water Heating Units	
Hydronic boiler	
Single family	120,000
Multifamily, per unit	75,000
Water Heating Appliances	
Water heater, automatic	
Storage 30 to 40 gallon tank	35,000
Storage 50 gallon tank	50,000
Water heater, automatic instantaneous	
Capacity at 2 gal/minute	142,800
Capacity at 4 gal/minute	285,000
Capacity at 6 gal/minute	428,400
Water heater, domestic, circulating or sidearm	35,000
Cooking Appliances	
Range, freestanding, domestic	65,000
Built-in oven or broiler unit, domestic	25,000
Built-in top unit, domestic	40,000
Other Appliances	
Refrigerator	3,000
Clothes dryer, type 1, domestic	35,000
Gas fireplace direct vent	40,000
Gas log	80,000
Barbecue	40,000
Gaslight	2,500

TABLE 12-3
SUPPORT OF PIPING

Steel pipe, nominal size of pipe (in.)	Spacing of Supports (ft.)	Nominal Size of Tubing Smooth-wall (in. O.D.)	Spacing of Supports (ft.)
½	6	½	4
¾ or 1	8	5/8 or ¾	6
1 ¼ or larger (horizontal)	10	7/8 or 1 (horizontal)	8
1 ¼ or larger (vertical)	Every floor level	1 or larger (vertical)	Every floor level

TABLE 12-8
SIZE OF GAS PIPING

MAXIMUM DELIVERY CAPACITY IN CUBIC FEET OF GAS PER HOUR (CFH)
TO DETERMINE CFH, DIVIDE TOTAL BTU'S BY 1000.

	Pipe Size							
Length	**½"**	**¾"**	**1"**	**1 ¼"**	**1 ½"**	**2"**	**2 ½"**	**3"**
10 ft.	172	360	678	1,390	2,090	4,020	6,400	11,300
20 ft.	118	247	466	957	1,430	2,760	4,400	7,780
30 ft.	95	199	374	768	1,150	2,220	3,530	6,250
40 ft.	81	170	320	657	985	1,900	3,020	5,350
50 ft.	72	151	284	583	873	1,680	2,680	4,740
60 ft.	65	137	257	528	791	1,520	2,430	4,290
70 ft.	60	126	237	486	728	1,400	2,230	3,950
80 ft.	56	117	220	452	677	1,300	2,080	3,670
90 ft.	52	110	207	424	635	1,220	1,950	3,450
100 ft.	50	104	195	400	600	1,160	1,840	3,260
125 ft.	44	92	173	355	532	1,020	1,630	2,890
150 ft.	40	83	157	322	482	928	1,480	2,610
175 ft.	37	77	144	296	443	854	1,360	2,410
200 ft.	34	71	134	275	412	794	1,270	2,240
250 ft.	30	63	119	244	366	704	1,120	1,980

How to use Table 12-8 (simple method):

1. Find on the left hand side of the chart the total length of pipe from the meter to the farthest away appliance. This will be the row that you will use for calculating your entire system. Do not use any other row once you have determined the length.

2. Find the total CFH's in the row that is equal to or greater than your total. For the purposes of sizing, divide your total BTU's by 1000 to obtain the CFH.

3. Once you have found the number, go up the column to see the required pipe size. This is the size needed from the meter to the first tee in the line.

4. To determine the size of the branch, add up the total BTU's served by the branch, convert to CFH's, use the same row and find the number that is equal to or greater than, go up the column to find the required pipe size of that branch.

5. Use this same procedure for all the remaining branch lines.